

According to the determining results from step S212, if the second preset rpm speed has been reached, an instability measurement is taken in step S213.

Subsequently, when it is determined in step S214 that there is no instability, the main spin cycle is begun in step S215 and carried out until a determining in step S216 if the spin cycle is completed.

If the determining in step S214 shows that there is instability, the instability is displayed and the spin cycle is stopped in step S217.

If the determining in step S208 shows that the load is a single article, the spin cycle is implemented in step S218 according to the inputted settings.

The above-described washing machine and its controlling method according to the present invention are provided to maintain the rotating speed of the drum (not shown) within a range (in which a single article of laundry does not tangle while rotating) over a preset duration of a few seconds, and then implement a sudden accelerating rate, when a load of laundry is sensed as a single article. In this way, by sharply increasing the rotating speed of the drum to evenly distribute the single article therein and then taking an instability measurement, the beginning of the spin cycle can be controlled.

Similarly, after evenly distributing the single article, and measuring instability when the second rpm (of 108rpms) is reached, there is virtually no instability, and the spin cycle can begin earlier.

#### **【Industrial Applicability】**

The washing machine and the control method thereof according to the present invention can substantially reduce tangling of laundry for a smooth operation of the spin cycle, and thus, a high industrial applicability.

#### **【CLAIMS】**

##### **【Claim 1】**

A washing machine comprising:

a control panel for selecting a wash cycle;

a sensor for sensing a load of laundry inside a drum during an operation of the wash cycle selected through the control panel; and

a control unit for conducting the wash cycle selected through the control panel and controlling an rpm speed of the drum according to the sensed load of laundry sensed by the sensor, for untangling the laundry.

##### **【Claim 2】**

The washing machine according to claim 1, wherein the control unit controls a spin cycle of a wash course according to the load of laundry sensed by the sensor, when the spin cycle is begun.

##### **【Claim 3】**

The washing machine according to claim 2, wherein the control unit controls an

accelerating rate of the rpm speed of the drum differently, when the load of laundry sensed by the sensor is a small load.

**【Claim 4】**

The washing machine according to claim 3, wherein the sensor senses whether the load of laundry inside the drum is a small, small to medium, medium, medium to large, or large load, and the control unit establishes ranges when the load of laundry is sensed by the sensor to be a small to medium or a smaller load and controls the accelerating rate of the rpm speed of the drum in different accelerating rates.

**【Claim 5】**

The washing machine according to claim 4, wherein the established ranges include a first range between 400ms/1rpm and 350ms/1rpm and a second range between 190ms/1rpm and 160ms/1rpm for raising the rpm speed of the drum at an accelerating rate.

**【Claim 6】**

The washing machine according to claim 1, wherein the control unit controls a spin cycle according to whether the load of laundry sensed by the sensor is a single article, when the rinse cycle is begun.

**【Claim 7】**

The washing machine according to claim 6, wherein if the load of laundry sensed by the sensor is a single article, an untangling cycle for rotating the drum at a predetermined rpm speed over a predetermined duration is implemented.

**【Claim 8】**

The washing machine according to claim 7, wherein the predetermined rpm speed at which the drum is rotated in the untangling cycle is in a range of 35 to 37 rpms.

**【Claim 9】**

The washing machine according to claim 7, wherein the untangling cycle includes an rpm accelerating rate thereafter a predetermined amount greater than an rpm accelerating rate therebefore.

**【Claim 10】**

The washing machine according to claim 7, wherein the untangling cycle includes an rpm accelerating rate therebefore of between 190ms/1rpm and 160ms/1rpm, and an rpm accelerating rate thereafter of 60ms/1rpm.

**【Claim 11】**

A controlling method of a washing machine having a control panel, a sensor, and a control unit, the controlling method comprising:

selecting a wash cycle through the control panel and inputting operating commands;

conducting by the control unit of the wash cycle selected through the control

panel when the operating commands are inputted;  
sensing a load of laundry through the sensor when a spin cycle begins in the wash cycle;  
implementing by the control unit of an rpm accelerating rate of a drum differently and untangling the laundry, according to the sensed load of laundry;  
and  
conducting the spin cycle when the untangling of the laundry is completed.

**【Claim 12】**

The controlling method according to claim 11, wherein the untangling of the laundry includes:

raising an rpm speed of the drum to a preset first rpm speed at a preset first rpm accelerating rate and rotating the drum, when the load of laundry is sensed to be a small load; and

raising the rpm speed of the drum to a preset second rpm speed at a preset second rpm accelerating rate and rotating the drum, when the preset first rpm speed is reached.

**【Claim 13】**

The controlling method according to claim 12, wherein the first rpm accelerating rate is in a range between 400ms/1rpm and 350ms/1rpm, and the second rpm accelerating rate is in a range between 190ms/1rpm and 160ms/1rpm.

**【Claim 14】**

The controlling method according to claim 12, wherein the conducting of the spin cycle includes:

sensing instability when the second rpm speed is reached, and

beginning the spin cycle when instability is not sensed in the sensing of the instability.

**【Claim 15】**

A controlling method of a washing machine having a control panel, a sensor, and a control unit, the controlling method comprising:

selecting a wash cycle through the control panel and inputting operating commands;

conducting by the control unit of the wash cycle selected through the control panel when the operating commands are inputted;

sensing through the sensor whether a load of laundry is a single article when a spin cycle begins in the wash cycle;

rotating by the control unit of the drum at a predetermined rpm speed over a predetermined duration with the control unit according to whether the sensed load of laundry is a single article, and untangling the load of laundry; and

beginning the spin cycle when the untangling of the load of laundry is completed.

**【Claim 16】**

The controlling method according to claim 15, wherein the predetermined rpm speed at which the drum is rotated is in range of 35 to 37 rpms.

**【Claim 17】**

The controlling method according to claim 15, wherein the untangling of the load of laundry includes:

raising the rpm speed of the drum to the predetermined rpm speed at a first accelerating rate and rotating the drum, when the load of laundry is sensed to be a single article;

maintaining the preset rpm speed and rotating the drum over the predetermined duration, when the predetermined rpm speed is reached; and

raising the rpm speed of the drum by a second accelerating rate when the predetermined duration is elapsed.

**【Claim 18】**

The controlling method according to claim 17, wherein the spin cycle includes:

sensing instability after the raising of the rpm speed of the drum at the second accelerating rate; and

conducting the spin cycle when instability is not sensed in the sensing of instability.

**【Claim 19】**

The controlling method according to claim 17, wherein the second accelerating rate is greater by a predetermined amount than the first accelerating rate.

**【Claim 20】**

The controlling method according to claim 17, wherein the first accelerating rate lies in a range between 190ms/1rpm and 160ms/1rpm, and the second accelerating rate is 60ms/1rpm.